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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/383,340	08/25/1999	STEVEN KLEIMAN	NAP-010	6451

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EXAMINER

KUPSTAS, TOD A

ART UNIT	PAPER NUMBER
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2153

DATE MAILED: 05/21/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/383,340

Applicant(s)

KLEIMAN, STEVEN

Examiner

Tod Kupstas

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/3/2003 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 23-26, 28, 29, and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Menon (US 6,446,220).

As set forth in claim 23, Menon discloses a file server; see col. 13, lines 11-15 (this can be part of a file server system) including a set of common storage elements (10a-10c)); at least a pair of nodes (4a-4c) disposed in said file server, each of said nodes being connected to said

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common set of storage elements (through 12, fig. 1) and including a processor and a memory (elements 6a-6c, 8a-8c) so as to be capable of processing file server commands for said set of storage elements (10a-10c); at least one inter-node connectivity element (12) coupled to said nodes; and a connection for coupling said file server commands to said nodes (element 13).

As set forth in claim 24, Menon discloses a file server wherein each of said pair of nodes (4a-c) are disposed to failover to each other; see col. 7, line 50-col. 8, line 44.

As set forth in claim 25, Menon discloses a file server wherein each of said pair of nodes (4a-4c) includes a processor and a memory; (elements 6a-6c, 8a-8c).

As set forth in claim 26, Menon discloses a file server wherein each of said storage elements corresponds to one node of said pair (10a corresponds to element 4a, etc.); each of said storage elements is coupled to both nodes of said pair (through element 12); whereby both nodes of said pair are equally capable of controlling said storage elements; see col. 3, line 66-col. 4, line 18.

As set forth in claim 28, Menon discloses a file server wherein scaling for a file server system that includes said file server can be achieved by coupling said pair of nodes to another pair of nodes in another file server through said inter-node connectivity element; see col. 11, line 65-col. 12, line 26.

As set forth in claim 29, Menon discloses a common set of storage elements includes a RAID storage system; see col. 5, lines 18-59.

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As set forth in claim 34, Menon discloses a file server wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein said first node controls said storage elements in response to said file server commands while said second node is coupled to said storage elements and does not control said storage elements in response to said file server commands; see col. 7, line 15-col. 9, line 58.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon (US 6,446,220) in view of Kern et al. (US 5,720,029).

As set forth in claim 30, Menon discloses a file server wherein said pair of nodes includes a first node (100) and a second node (200); wherein when said file server commands are directed to said first node, said file server commands are executed at said first node.

As set forth in claim 31, Menon discloses a file server wherein when said file server commands are directed to said first node (4a) and said first node is inoperable, said file server commands are executed at said second node (4b); and wherein when said file server commands

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are directed to said second node and said second node is inoperable, said file server commands are executed at said first node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 32, Menon discloses a file server wherein said pair of nodes includes a first node (4a) and a second node (4b); and wherein said pair of nodes are disposed to failover from said first node to said second node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 33, Menon discloses a file server wherein said pair of nodes includes a first node (4a) and a second node (4b); and said pair of nodes are disposed to failover from said first node to said second node; see col. 7, line 50-col. 8, line 44.

Menon does not disclose having the recovery control for each respective node performing a back-up copying operation concurrent with the receipt of commands from a user. Kern discloses a system wherein commands to the primary site are copied on the secondary site as well in order to provide a mechanism for fault recovery. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have provided the system of Menon with the means for concurrent recording system commands for fault-recovery purposes, as taught by Kern. The rationale is as follows: It would have been desirable to have had means for transparently switching the control of the system. As Kern teaches the desirability of concurrently recording commands sent to the system in a secondary system, one of ordinary skill would have been motivated by Kern's teaching to have provided the system of Menon, with concurrent recording of commands in the recovery controllers, thereby having provided rapid and transparent fault-recovery for the system of Menon.

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6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Menon (US 6,446,220).

As set forth in claim 27, Menon does not disclose having a NUMA network. A NUMA network is the state wherein a system has both DMA and remote memory access. Official notice is taken to having a NUMA network. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have provided the system of Menon, with the NUMA system. The rationale is as follows: It would have been desirable to have permitted memory access to clients in a variety of ways. As having both direct and remote memory access is a standard way of achieving memory access, one of ordinary skill would have been motivated by the desire to provide means for accessing the memory to have provided both direct and remote memory access to the system of Menon, thereby having provided efficient means for accessing the memory.

7. Claims 35-38, 40-41, 46-50, 52, 53 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon (US 6,446,220) in Hemphill et al (US 5,781,716).

As set forth in claim 35, Menon discloses a method of operating a file server including operating at least a pair nodes (4a, 4b) disposed in said file server, each of said nodes being connected to a common set of storage elements (10a, 10b) and including a processor and a memory (elements 8a, 8b, 6a, 6b) so as to be capable of processing file server commands for said common set of storage elements.

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As set forth in claim 35, Menon does not disclose communicating with other nodes in at least one other file server through at least one inter-node connectivity element coupled to said nodes; and coupling said file server commands to said nodes (Menon does disclose adding additional nodes to the system, therefore the addition of further nodes is contemplated and therefore accommodating an additional file server system can be accommodated to Menon). Hemphill discloses communicating with other nodes in at least one other file server through at least one inter-node connectivity element coupled to said nodes; and coupling said file server commands to said nodes; see col. 11, line 17-col. 12, line 7. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have expanded the system of Menon, to have intercommunication between multiple servers, as taught by Hemphill. The rationale is as follows: It would have been desirable to have expanded the system as needed to provide fault-tolerance to additional server systems. As Hemphill teaches the desirability of providing inter-connectivity to multiple servers, one of ordinary skill would have been motivated by Hemphill's teaching to have enabled the system of Menon to expand with additional file servers, thereby having provided other server systems of the network with fault tolerance.

As set forth in claim 36, Menon discloses a method of operating a file server wherein each of said pair of nodes are disposed to failover to each other; see col. 7, line 50-col. 8, line 44.

As set forth in claim 37, Menon discloses a method of operating a file server wherein each of said pair of nodes includes a processor and a memory (see elements 6a-6c, and 8a-8c).

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As set forth in claim 38, Menon discloses a method of operating a file server wherein each of said storage elements corresponds to one node of said pair (10a-10c, corresponds to 4a-4c); each of said storage elements is coupled to both nodes of said pair (through 12); whereby both nodes in said pair are equally capable of controlling said storage elements; see col. 3, line 66-col. 4, line 18.

As set forth in claim 40, Menon discloses a method of operating a file server wherein scaling for a file server system that includes said file server can be achieved by coupling said pair of nodes to another pair of nodes in another file server through said inter-node connectivity element; see col. 11, line 5-col. 12, line 26.

As set forth in claim 41, Menon discloses a method wherein said common set of storage elements includes a RAID storage system; see col. 5, lines 18-59.

As set forth in claim 46, Menon discloses a method of operating a file server wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein said first node (4a) controls said storage elements in response to said file server commands while said second node (4b) is coupled to said storage elements (202) and does not control said storage elements in response to said file server commands; see col. 7, line 15-col. 9, line 58.

As set forth in claim 47, Menon discloses a memory storing information including instructions, the instructions executable by a processor to operate a file server, the instructions comprising: operating at least a pair of nodes (4a, 4b) disposed in said file server, each of said nodes being connected to a common set of storage elements (10a-10c) and including a processor

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and a memory (elements 6a-6c, 8a-8c) so as to be capable of processing file server commands for said common set of storage elements.

As set forth in claim 47, Menon does not disclose communicating with other nodes in at least one other file server through at least one inter-node connectivity element coupled to said nodes; and coupling said file server commands to said nodes. (Menon does disclose adding additional nodes to the system, therefore the addition of further nodes is contemplated and therefore accommodating an additional file server system can be accommodated to Menon). Hemphill discloses communicating with other nodes in at least one other file server through at least one inter-node connectivity element coupled to said nodes; and coupling said file server commands to said nodes; see col. 11, line 17-col. 12, line 7. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have expanded the system of Menon, to have intercommunication between multiple servers, as taught by Hemphill. The rationale is as follows: It would have been desirable to have expanded the system as needed to provide fault-tolerance to additional server systems. As Hemphill teaches the desirability of providing inter-connectivity to multiple servers, one of ordinary skill would have been motivated by Hemphill's teaching to have enabled the system of Menon to expand with additional file servers, thereby having provided other server systems of the network with fault tolerance.

As set forth in claim 48, Menon discloses a memory wherein each of said pair of nodes are disposed to failover to each other; see col. 7, lin 50-col. 8, line 44.

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As set forth in claim 49, Menon discloses a memory wherein each of said pair of nodes includes a processor and a memory; (elements 6a-6c, 8a-8c).

As set forth in claim 50, Menon discloses a memory wherein each of said storage elements corresponds to one node of said pair (elements 10a-10c corresponding to 4a-4c); each of said storage elements is coupled to both nodes of said pair; whereby both nodes in said pair are equally capable of controlling said storage elements; see col. 3, line 66-col. 4, line 18.

As set forth in claim 52, Menon discloses a memory wherein scaling for a file serve server system that includes said file server can be achieved by coupling said pair of nodes to another pair of nodes in another file server through said inter-node connectivity element; see col. 11, line 65-col. 12, line 26.

As set forth in claim 53, Menon discloses a memory wherein said common set of storage elements includes a RAID storage system; see col. 5, line 18-59.

As set forth in claim 58, Menon discloses a memory wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein said first node (4a) controls said storage elements in response to said file server commands while said second node (4b) is coupled to said storage elements (4b) and does not control said storage elements in response to said file server commands; see col. 7, line 15-col. 9, line 58.

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8. Claims 39, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon (US 6,446,220) in view of Hemphill et al. (US 5,781,716).

As set forth in claims 39, and 51, Menon does not disclose having a NUMA network. A NUMA network is the state wherein a system has both DMA and remote memory access. Official notice is taken to having a NUMA network. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have provided the system of Menon, with the NUMA system. The rationale is as follows: It would have been desirable to have permitted memory access to clients in a variety of ways. As having both direct and remote memory access is a standard way of achieving memory access, one of ordinary skill would have been motivated by the desire to provide means for accessing the memory to have provided both direct and remote memory access to the system of Menon, thereby having provided efficient means for accessing the memory.

9. Claims 42-45, and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon (US 6,446,220) in view of Hemphill et al. (US 5,781,716) and further in view of Kern et al. (US 5,720,029).

As set forth in claim 42, Menon discloses a method of operating a file server wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein when said file server commands are directed to said first node, said file server commands are executed at said first node (4a); see col. 7, line 50-col. 8, line 44.

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As set forth in claim 43, Menon discloses a method of operating a file server wherein when said file server commands are directed to said first node (4a) and said first node is inoperable, said file server commands are executed at said second node (4b); and wherein when said file server commands are directed to said second node and said second node is inoperable, said file server commands are executed at said first node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 44, Menon discloses a method of operating a file server wherein said pair of nodes includes a first node (4a) and a second node (4b); and wherein said pair of nodes are disposed to failover from said first node to said second node ; see col. 7, line 50-col. 8, line 44.

As set forth in claim 45, Menon discloses a method of operating a file server wherein said pair of nodes includes a first node (4a) and second node (4b); and said pair of nodes are disposed to failover from said first node to said second node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 54, Menon discloses a memory wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein when said file server commands are directed to said first node, said file server commands are executed at said first node; and wherein when said file server commands are directed to said second node (4b), said file server commands are executed at said second node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 55, Menon discloses memory wherein when said file server commands are directed to said first node (4a) and said first node is inoperable, said file server commands are executed at said second node (4b); and wherein when said file server commands

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are directed to said second node (4b) and said second node (4b) is inoperable, said file server commands are executed at said first node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 56, Menon discloses a memory wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein said first node responds to said file server commands while said second node records said file server commands; and wherein said pair of nodes are disposed to failover from said first node to said second node; see col. 7, line 50-col. 8, line 44.

As set forth in claim 57, Menon discloses a memory wherein said pair of nodes includes a first node (4a) and a second node (4b); wherein said first node (4a) responds to a first one of said file server commands; wherein said second node responds to a second one of said file server commands while said first node records said second one of file server commands; and said pair of nodes are disposed to failover from said first node to said second node; see col. 7, line 50-col. 8, line 44.

As set forth in claims 42-45, and 54-57, Menon does not disclose having the recovery control for each respective node performing a back-up copying operation concurrent with the receipt of commands from a user. Kern discloses a system wherein commands to the primary site are copied on the secondary site as well in order to provide a mechanism for fault recovery. It would have been obvious to a person of ordinary skill in the art at the time this invention was made to have provided the system of Menon with the means for concurrent recording system commands for fault-recovery purposes, as taught by Kern. The rationale is as follows: It would

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have been desirable to have had means for transparently switching the control of the system. As Kern teaches the desirability of concurrently recording commands sent to the system in a secondary system, one of ordinary skill would have been motivated by Kern's teaching to have provided the system of Menon, with concurrent recording of commands in the recovery controllers, thereby having provided rapid and transparent fault-recovery for the system of Menon.

Response to Arguments

9. Applicant's arguments with respect to claims 23-58 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to Hemphill were considered. In order to avoid any further confusion with respect to what a "node" is, the Examiner has rewritten the rejection utilizing Menon which clearly utilizes the term "node" in describing the system. The Examiner again stresses however that "node" is a broad term. The Microsoft Press Computer Dictionary 3rd Edition defines "node" as "1. A junction of some type. 2. In local area networks, a device that is connected to the network and is capable of communicating with other network devices. 3. In tree structures, a location on the tree that can have links to one or more nodes below it...". The Examiner reproduces this definition to respond to the argument that because Hemphill distinctly

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refers to "servers", the "servers" cannot therefore be "nodes." The usage of Menon is to avoid any possible confusion as to what a node is.


The request for an interview has been considered, however, in light of the new rejection the Examiner believes that an interview would be best after this Office Action is considered.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod Kupstas whose telephone number is (703) 305-2655.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess, can be reached at (703) 305-4792. The fax phone number for this art unit is (703) 308-7201. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 305-3900.

Tod Kupstas


May 13, 2003